

REMARKS

Status of the Claims

Claims 1, 4, 7, 11, 12, 15-23 and 25 are now present in this application. Claims 1 and 25 are independent. Claims 15-22 have been withdrawn.

Claim 25 has been added and claim 1 has been amended. No new matter has been added. New claim 25 and amended claim 1 are supported by the specification, e.g., [0039]-[0046] and Figs. 5 and 6. Thus, no new matter has been added.

Reconsideration of this application, as amended, is respectfully requested.

Rejection under 35 U.S.C. §103(a)

Claims 1, 4, 7, 11, 12 and 23 are rejected 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,331,384 to Sato (hereinafter '**384**'), US Patent No. 6,176,667 to Fairbairn et al. (hereinafter '**667**') and US Patent No. 6,265,034 to Kagawa et al. (hereinafter '**034**').

This rejection is respectfully traversed and reconsideration is requested.

While not conceding to the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicants respectfully submit that independent claim 1 has been amended to further emphasize the distinctions between the present invention and the cited art.

The Present Invention and its Advantages

Claims 1, 4, 7, 11, 12 and 23 are allowable over the cited references individually or in combination in that **independent claim 1** recites at least a combination of elements including, for example, comprising: **a substrate adapted to receive an alignment material on an entire surface of the substrate**; a printing part including a print table fixing the substrate, and at least one inkjet head to spray the alignment material onto the entire surface of the substrate including all pixel regions to form the alignment layer printed on the entire surface of the substrate; a drying part positioned directly and vertically above the printing part, the drying part including a

dry table having a hot plate adapted to dry a solvent of the alignment material onto the substrate; and a transferring part having a transfer robot lifting the printed substrate to a **height higher than the inkjet head** in a vertical direction, for transferring the printed substrate from the printing part to the drying part and placing the printed substrate on the dry table after printing process, wherein the at least one inkjet head is positioned between the print table and the drying part and is moved over the substrate in a horizontal direction in which **the substrate on the print table is maintained in a fixed state**, and wherein at least an array of the inkjet heads is arranged in at least one line according to a long side or a short side of the substrate. (emphasis added).

In particular, one embodiment of the claimed invention discloses that the at least one inkjet head 34 sprays the alignment material 20 onto the entire surface of the substrate which includes all pixel regions, as shown in paragraph [0046] of the specification and FIG. 6, and that the transfer robot 52 lifts the substrate having the printed alignment layer 20 on the printing part, to height higher than the inkjet head in vertical direction, as illustrated on FIG. 5.

Distinctions Between the Present Invention and the Cited Art

The claimed substrate receives an alignment material on its entire surface. That is, the inkjet head sprays the alignment material on the entire surface of the substrate to form an alignment layer. In contrast, '384 discloses that only one of the R, G, B inkjet heads sprays the color ink material for forming the color filter which is respectively corresponding to the pixel electrodes, not corresponding to all pixel regions.

With regard to this point, the Examiner states at page 2 of the current Office Action that Applicants argue that the art currently of record does not fairly teach a process wherein an alignment material is sprayed across the entire surface. Examiner disagrees, noting that the claims are drawn to a device, in which an inkjet printer is explicitly claimed. An inkjet printer is inherently capable of printing over an entire surface.

Applicants respectfully disagree. See the following disclosures at col. 2, lines 25-42 of '384.

The invention further provides an apparatus for manufacturing a color filter by coloring a color filter substrate, comprising a partitioning unit for partitioning the substrate into a portion which is to be colored and a portion that is not to be colored, a coloring unit for coloring the portion to be colored by discharging ink from an inkjet head, and a drying unit for drying the ink discharged by the coloring unit, the partitioning unit, coloring unit and drying unit being arranged in succession as a single manufacturing line.

The invention further provides a color filter manufactured by coloring a color filter substrate, the color filter being manufactured by successively executing a partitioning step of partitioning the substrate into a portion which is to be colored and a portion that is not to be colored, a coloring step of coloring the portion to be colored by discharging ink from an inkjet head, and a drying step of drying the ink discharged at the coloring step, the partitioning step, coloring step and drying step being performed successively.

The invention further provides a display device equipped with a color filter manufactured by coloring a color filter substrate, the display device comprising a color filter and light-quantity varying means integrated with the color filter for varying quantity of light, the color filter being manufactured by successively executing a partitioning step of partitioning the substrate into a portion which is to be colored and a portion that is not to be colored, a coloring step of coloring the portion to be colored by discharging ink from an inkjet head, and a drying step of drying the ink discharged at the coloring step, the partitioning step, coloring step and drying step being performed successively.

As seen from the above, ‘384 essentially requires a step of partitioning substrate into a portion to be colored by the inkjet and a portion not to be colored so that a desired color filter should be manufactured. See also Figs. 1A-1D of ‘384 illustrating that the partitioned substrates are shown for coloring. In other words, if the entire surface of the substrate of ‘384 without portioning step were to be colored, an intended color filter of ‘384 cannot be formed. Thus, the claimed substrate adapted to receive an alignment material on its entire surface, is clearly distinct from the partially colored substrate. Also, the claimed inkjet to spray the alignment material on the entire surface of the substrate is taught away from the teachings of ‘384 in which the inkjet to spray the ink onto only the partial surface of the substrate to be colored. Therefore, Applicant respectfully request the Examiner to reconsider that “an inkjet printer is inherently capable of printing over an entire surface”.

Also, a theory of inherency must be supported by facts and/or technical reasoning that reasonably support a determination that the allegedly inherent characteristic necessarily flows

from the teachings of the prior art. *Ex parte Levy* 17 USPQ2d 1461 (BPAI 1990) (emphasis added). The fact that a prior art article may inherently have the characteristics of the claimed product is not sufficient. *Ex parte Skinner* (BPAI 1986) 2 USPQ2d 1788. Inherency must be a necessary result and not merely a possible result. *In re Oelrich* (CCPA 1981) 666 F2d 578, 212 USPQ 323; *Ex parte Keith et al.* (POBA 1966) 154 USPQ 320. Thus, reconsideration of such inherency issue is respectfully requested.

Also, the present substrate is fixed onto a print part so that when the at least one inkjet head is moved over the substrate in horizontal direction, the print part having the substrate thereon is maintained at a fixed state. However, the substrate of '384 is moved to the position of the inkjet head so that the inkjet head 55 is driven in conformity with the positions of the color filter to discharge ink toward the glass substrate 1. See the following of '384 (col. 12, lines 38-50).

In order for positioning to be carried out, the stage holding the glass substrate 1 is moved accurately in a horizontal plane by a mechanism similar to that used in the exposure apparatus 203. The glass substrate 1 is conveyed to the positioning stage by a conveyance system (described later in greater detail) so that its position may be adjusted. At the completion of positioning, the substrate is moved, along with the stage, to the position of the inkjet head 55 and the inkjet head 55 is driven in conformity with the positions of the pixels of the color filter to discharge ink toward the glass substrate 1.

With regard to this, the Examiner asserted at page 7 of the Office Action that

'384/667 teaches a print table to receive the substrate and an inkjet head ('384 column 12, lines 36-51, talking about moving a print stage and driving an inkjet head assembly); as each of these parts can be moved independently, the apparatus can function by or by moving the inkjet over the stationary substrate.

Applicants respectfully disagree with this point. According to the above disclosure (col. 12, lines 36-50 as well as Fig. 14 and col. 14, lines 60-col. 15, line 47) of '384, the substrate to be colored must be moved to the position of the inkjet head and the inkjet head is driven in conformity with the positions of the pixels of the color filter since the inkjet head of '384 is not moved over the substrate in a horizontal direction. Also, there is no support for the Examiner's position that "each of these parts can be moved independently in '384." On the other hand, the claimed inkjet head is moved over the substrate in a horizontal direction in which the substrate on the print table is maintained at a fixed state and in accordance with this movement of the

inkjet head, an alignment material is sprayed on the entire surface of the substrate fixed on the print table.

Further, the presently claimed transferring part is patentably distinct from robot of '384. In this regard, the Examiner asserts at page 3 that

...., noting that since the robot has to then elevate itself in order to be in position to remove the next substrate, the robot is certainly capable of elevating the substrate from a lower position to a higher one. Further, as the hand of the robot has a finite thickness, the act of slipping the hand under the substrate inherently would raise the substrate to a higher portion of the printing part for transport to the drying part.

Applicants respectfully disagree. The presently claimed features recite "a transferring part having a transfer robot lifting the printed substrate to a height higher than the printing part in a vertical direction, for transferring the substrate from the printing part to the drying part and placing the substrate on the dry table after printing process." However, '384 does not disclose or suggest that the robot 303a lifts the colored glass substrate to a height higher than a coloring 308a apparatus. See the following disclosures based on Fig. 14 of '384:

The next glass substrate is prepared at the standby position 306a. When work is finished under these conditions, the robot 303a extracts the colored glass substrate from the coloring apparatus 90a and places it on the discharge conveyor 305a.

That is, '384 discloses that robot 303a transfers the colored glass substrate from coloring apparatus 90a to discharge conveyor 305 a in a horizontal direction. Nowhere within this disclosure of '384 is there an explicit or implicit recitation that a transferring part having a transfer robot lifts the colored substrate to a height higher than the inkjet head in a vertical direction, for transferring the substrate from the printing part to the drying part and placing the substrate on the dry table after printing process. Rather, after coloring process, robot 203a places the colored substrate to the conveyor 305a in a horizontal direction. Accordingly, the claimed transferring part is patentably distinct from that of '384.

Further, the claimed invention is directed to a device for forming an alignment layer of a display apparatus while '384 relates to a color filter of a display apparatus. Thus, the claimed device cannot be equated with the color filter of '384 in terms of structural elements and its relationship, as discussed above. Therefore, the present invention is structurally distinct from the

'384 reference in terms of printed substrate, inkjet head and their relationship. Reconsideration is respectfully requested in this regard.

Also, in contrast to amended claim 1 of the present invention, the secondary references '667 and '034 also do not disclose or suggest the presently claimed features. Thus, the deficiencies of '384 cannot be cured by '667 and '034.

For at least reasons set forth above, the claimed invention is not obvious over the cited references singly or in combination. Accordingly, claim 1 and claims 4, 7, 11-12 and 23 which depend either directly or indirectly upon claim 1, are allowable over the cited art. New claim 25 having features similar to claim 1 is also allowable.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection are respectfully requested.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider the presently outstanding rejection and that it be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

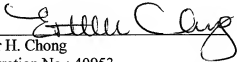
In view of the above remarks, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Kay Kyung-sook Chang, Registration No. 56946, at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

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